

Regional and Local Geoid Undulations for Computing Orthometric Heights from GPS Measurements, Phase I

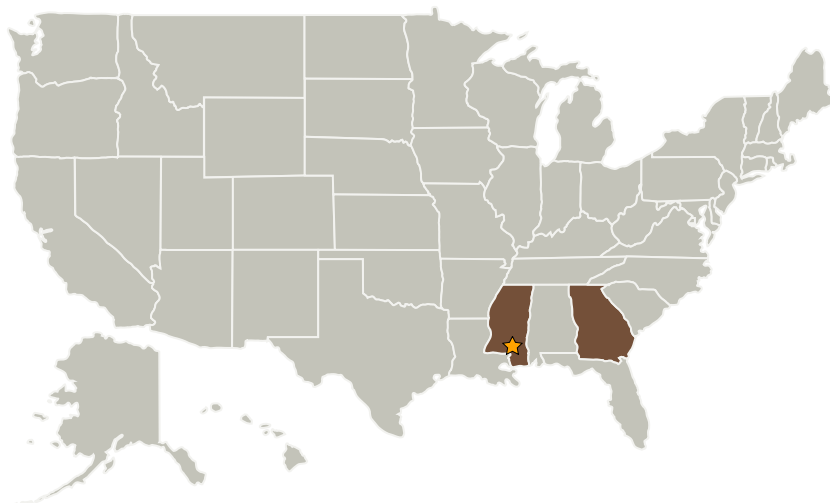
Completed Technology Project (2006 - 2006)



Project Introduction

This proposal explains procedures of using regional and local geoid undulations to improve and convert the global positioning system (GPS) elevations (ellipsoidal heights) into orthometric heights. The Geoid Undulation Model (Geoid 2003) for the North America has reached the centimeter level accuracy. Although the GPS accuracy has reached to millimeter level, the elevation component (converted to orthometric height) has not been optimized to the same level of accuracy as X and Y. This research will select a test site in North Georgia covering a 2° x 2° of hilly as well as plain area. The test site will also include an urban area such as the City of Atlanta, and a large water body such as the Lake Lanier. The 2° x 2° area is divided into 1° x 1°, 5' x 5', and 1' x 1' grid elements to compute global, regional, and local geoid undulations. Gravity data will be observed and compared against the gravity data obtained from the GRACE program. Also, the accuracy of existing geoid undulation in Georgia will be compared with the developed geoid undulation model, which will incorporate local and regional level gravity anomalies.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Stennis Space Center (SSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Stennis Space Center(SSC)	Lead Organization	NASA Center	Stennis Space Center, Mississippi
Earth Mapping International	Supporting Organization	Industry	Lawrenceville, Georgia

Primary U.S. Work Locations	
Georgia	Mississippi

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
 - └ TX11.4 Information Processing
 - └ TX11.4.2 Intelligent Data Understanding